

## National 5

### Homework EF2(N)

1. Evaluate, without a calculator:

(a)  $\frac{2}{5}$  of  $3\frac{1}{2}$

(b)  $1 - \frac{17}{20}$

(c)  $3\frac{5}{7} - 2\frac{1}{2}$

2. Solve, leaving your answer as a fraction:

(a)  $3x + 1 = 11$

(b)  $4x - 2 = 15$

(c)  $5x - 3 = 10 - 2x$

3. A survey of how pupils travelled to school revealed 8 walking, 10 by bus, 7 cycling and 4 by car. Show this information in an appropriate statistical diagram.

4. A rhombus has diagonals measuring 24 cm and 12 cm.

(a) Draw a sketch of the rhombus.

(b) Calculate its area.

(c) By using Pythagoras' Theorem on a suitable right-angled triangle, calculate the perimeter of the rhombus.

5. A rectangle has length  $2x + 5$  cm and breadth  $2x - 3$  cm.

(a) Find an expression for its perimeter  $P$  in terms of  $x$ .

(b) Given that the perimeter is 68 cm, find the value of  $x$ .

6. (a) Plot the points A 3,1 , B 7,4 and C 4,8 . Join them to make triangle ABC.

(b) Use Pythagoras' Theorem to determine the length of each side, leaving your answer as a square root, if necessary.

7. Calculate the average speed for the following journeys:

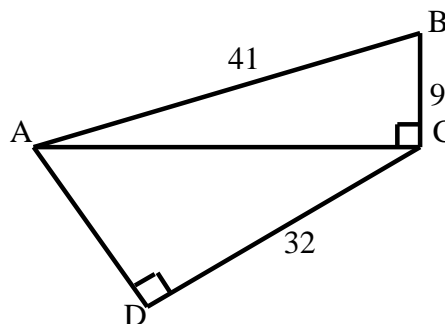
(a) 84 km in 6 hrs

(b) 35 km in 1 hr 15 min (answer in km/hr)

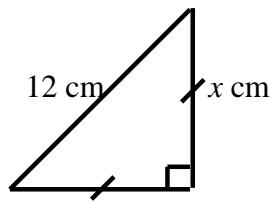
(c)  $3.2 \times 10^3$  km in  $8 \times 10^{-1}$  sec (answer in km/sec)

8. (a) Calculate the length of AD.

(c) Calculate the area of quadrilateral ABCD.  
[The units of length are cm.].



9. In the isosceles right-angled triangle below, find the value of  $x$ , correct to 1 decimal place.



10. A circle has diameter 8 units.

- (a) Calculate its circumference, leaving your answer in terms of  $\pi$ .  
(b) Calculate its area, leaving your answer in terms of  $\pi$ .

11. (a) A circle is inscribed in a square of side 12 units.  
Calculate the area of the circle, leaving your answer in terms of  $\pi$ .  
(b) A circle is inscribed in a square of side  $2a$  units.  
Calculate an expression for the area of the circle, leaving your answer in terms of  $a$  and  $\pi$ .

12. Evaluate, without a calculator:

(a)  $1\frac{1}{2} \times 2\frac{1}{3}$

(b)  $3\frac{1}{4} \times 1\frac{1}{7}$

(c)  $6\frac{1}{2} \div 3\frac{3}{4}$

(d)  $\frac{1}{2}$  of  $\frac{1}{3} + \frac{1}{4}$

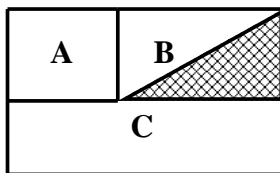
(e)  $2\frac{1}{7} \div 1\frac{2}{3}$

(f)  $2\frac{1}{2} \left( \frac{1}{4} + \frac{1}{2} \right)$

13. The sizes of the angles of a triangle are  $x^\circ$ ,  $2x^\circ$  and  $3x^\circ$ .  
find the value of  $x$  and hence the size of each angle.

14. The area of a circle is 100 square centimetres. Find its radius, to 3 significant figures.

15. Rectangles A, B and C have areas in the ratio 2:3:4.  
What fraction of the total area is shaded?



16. Find the distance travelled for each of the following journeys:

- (a) 3 hr 15 min at an average speed of 48 km/hr.  
(b) 47 min at an average speed of 90 km/hr.

17. A journey of 240 km is made in the following way:  
The first 30 km at an average speed of 60 km/hr.  
The last 50 km at an average speed of 50 km/hr.  
The middle part of the journey at an average speed of 80 km/hr.  
Find the time taken for the whole journey.

